Two Kinds of Blue Cohosh

by William G. Dore

The blue cohosh, *Caulophyllum thalictroides* (L.) Michx., is a common woodland plant familiar to Ontario naturalists. It is perhaps familiar more for its gaunt appearance, dull-coloured foliage and nondescript flowers than for any bright airy blooms it might display in springtime. Later on in the summer its hard blue "berries" (naked seeds), supported in pairs on stout stalks well above the leaves, however, are quite attractive.

Botanical books treat only one species of blue cohosh but I have become convinced, after a study of living plants at Ottawa and dried specimens from a broad range, that there are two distinct kinds in eastern North America. The two types were first drawn to my attention several years ago by W. Harold Minshall, now of the Agricultural Research Laboratory at London. He had been keeping careful track of the first flowering date of certain wild plants at Ottawa and had discovered one group of plants of blue cohosh which always came into bloom about ten days later than usual, year after year. It grew in an alluvial woodland along the Rideau River along with numerous clumps of the common earlier flowering plant. The late-flowering plant was also recognizable by its lighter green foliage and pale yellow flowers which contrasted strikingly with the dark purplish green foliage and maroon flowers of the ordinary plants. One might have thought that the pale plant was unhealthy in some way, or starved for nutrients, thus accounting for its tardier development. But this is not so; lack of purple pigment and later development are fixed characteristics and are to be found in blue cohosh growing elsewhere; indeed, this pale-leaved yellow-flowered plant is the one most widespread and the one of sole occurrence both to the east and west of Ontario and in the far south.

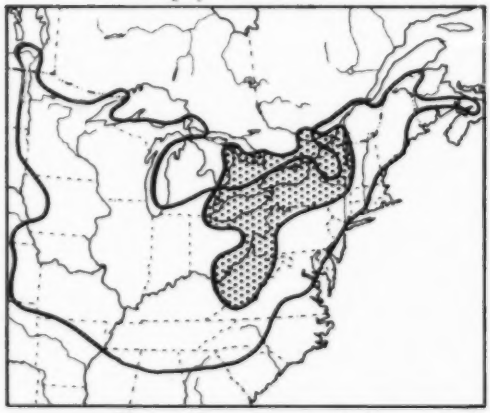
There are other correlated features to help distinguish the two kinds and since these are not set forth in the manuals they may be summarized here.

The true blue cohosh, the original species as first described by Linnaeus in 1753 from a specimen sent to him from "Virginia", is the pale plant with yellowish green to cream-coloured flowers. Its stems break through the ground in the spring and come into bloom about two weeks later than the other plant—but this feature being relative cannot be decided unless you happen to encounter both at the same place as Minshall did at Ottawa. Its sepals are 4 to 5 mm. long, rounded and somewhat cupped-up at the tip, its petals are about 1.5 mm. broad, its anthers about 0.7 mm. long, and the style on its ovaries is short, from 0.2 to 0.6 mm. long.

The other blue cohosh, the early-flowering plant with purplish green or maroon-coloured flowers, is the commoner one in Ontario. Its flower parts are all slightly larger than in the former: sepals 6 to 8 mm. long and generally curled back along the sides, petals about 2 mm. broad, anthers about 1.2 mm. long, style 1.0 to 1.7 mm. long. Its panicle is fewer flowered and more open.

The name var. *giganteum* was once given to a plant like this by Oliver A. Farwell at Farmington, near Detroit, where he found it on May 19, 1917. The description he gave of it (*Mich. Acad. Sci. Ann. Rpt. 1918*,

page 178) is not at all clear and probably it is on this account that later botanists have ignored his discovery. Apparently he proposed the name because the plant seemed to him to be a "gigantic" variety of the usual plants of the locality, having taller stems and larger leaves. Was he not just confronted with the illusion created by a plant having a head-start of a week or so in its springtime development? Actually, when fully grown, both kinds of plants are the same size. I have troubled the curator of the herabarium at the Cranbrook Institute of Science for information on the actual specimen that Farwell collected as his new variety. In the photograph of it received, I can see the length of the style and the nature of the panicle and so have become convinced that it is the same plant as the purple-flowered early-developing plant that is common at Ottawa and throughout southern Ontario. Considering all the contrasting features, however, I would be inclined to classify it as a different species rather than variety, but this is a matter of opinion. For the present we may refer to the two as *Caulophyllum thalictroides* var. *tha-*



Map 1. General range of the two kinds of blue cohosh.

G. M. Bartm.

Var. giganteum, *photographed at Toront*

lictroides, the Yellow-flowered Blu Cohosh, and *C. thalictroides* va *giganteum* Farw., the Purple-flowere Blue Cohosh. In its total range va *thalictroides* covers a larger area i North America than var. *giganteu* as shown in Map 1.

The more detailed occurrence the two varieties in our area is give in the plot Maps 2 and 3, respectivel The dots represent the localities f specimens preserved at the followir institutions: Plant Research Institut the National Museum and Carlet University at Ottawa, the Universi of Toronto, Ontario Agricultural C lege at Guelph, University of We ern Ontario at London, Queer University at Kingston, McMast University and the Royal Botan Gardens at Hamilton, University Montreal, the Montreal Botani Garden and McGill University Montreal, as well as some instit tions in the United States.

The number of specimens of *th lictroides* are much fewer in cor parison to *giganteum*, only 23 against 182, and this gives a fa measure of relative abundance of t two for that portion of Canac shown in the maps. Elsewhere

Canada and in various of the States the proportion is quite different.

The position of the boundary line placed around the dots in the maps is, of course, quite tentative as there are too few records of places where the plant is known to be absent (A) to allow the line to be drawn more accurately. It is rather obvious, nevertheless, that the patterns of distribution of the plants do not correspond with the kind of bedrock, type of soil or with any particular feature of climate.

The present-day occurrence of the varieties seems to be related more to the routes of migration the plants might have taken in spreading northward after glaciation. It looks as though var. *thalictroides* crossed over the middle of Lake Erie! This would have been possible if we postulate a continuous land-bridge across the lake at some early period when the water level was lower than at present. How else can we explain occurrence in Norfolk County and adjacent areas, and absence in the Niagara Peninsula? Perhaps a seed was blown across the ice! Also, its arrival in the Ottawa Valley must date after the Champlain Sea drained out, and its route of migration must have been from some other direction than directly northward on the Frontenac Axis. For the lone stand on Manitoulin Island at Mindemoya, it is suspected that some "papoose root" must have been brought over by the Indians from northern Michigan where only the typical variety occurs. Two additional records for the Manitoulin area, Sheguiandah and Great Duck Island, are provided by Dr. J. H. Soper. Specimens collected by C. E. Garton in Thunder Bay and Rainy River Districts (outside the map frame) are also var. *thalictroides*.

The purple-flowered *giganteum* apparently approached Ontario from the south at a time when the Great Lakes had finally attained their present sizes. Although arriving later, this vigorous plant must have migrated faster, swung around the ends of the lakes to penetrate well up the Trent System, to Georgian Bay and the Bruce Peninsula, and over a considerable area elsewhere. Our knowledge of migration is admittedly very inadequate and is only gradually taking shape. More records of occurrence are needed before such routes of migration can be recognized, outlined, and receive full acceptance. Reliable records of absenteeism, more difficult to obtain, are also needed. The records for Wingham (circle) based on old specimens by J. A. Morton require verification.

The particular specimen chosen for illustration was collected by John Macoun at Belleville on the 24th of May, 1867. It is of interest, besides being antique, in that it shows the comparative distinctions very well. A sprig of the yellow-flowered variety in full bloom (encircled on the left) has been picked by Macoun and tucked in on the mount of the main specimen of the purple-flowered variety at a point he thought appropriate. All but one sepal has fallen from the purple-flowered, long-styled plant (as seen against the white card inserted). The fullness of panicle is also well-contrasted, 16 florets in one and 7 in the other. This mixed collection gathered, perhaps hastily, on The Queen's Birthday holiday by the school teacher who was later to become known as the Father of Canadian Botany, then, turns out to be a most fascinating and instructive specimen. It is preserved in the National Herbarium of Canada.

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Composite specimen of blue cohosh varieties from Belleville prepared by John Macoun in 1867.

Reprinted from *The Ontario Naturalist*, March, 1964

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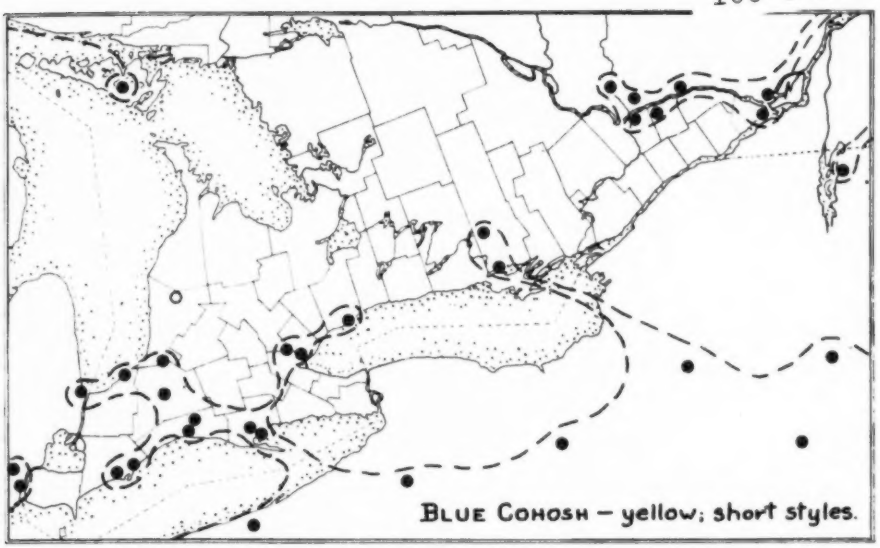
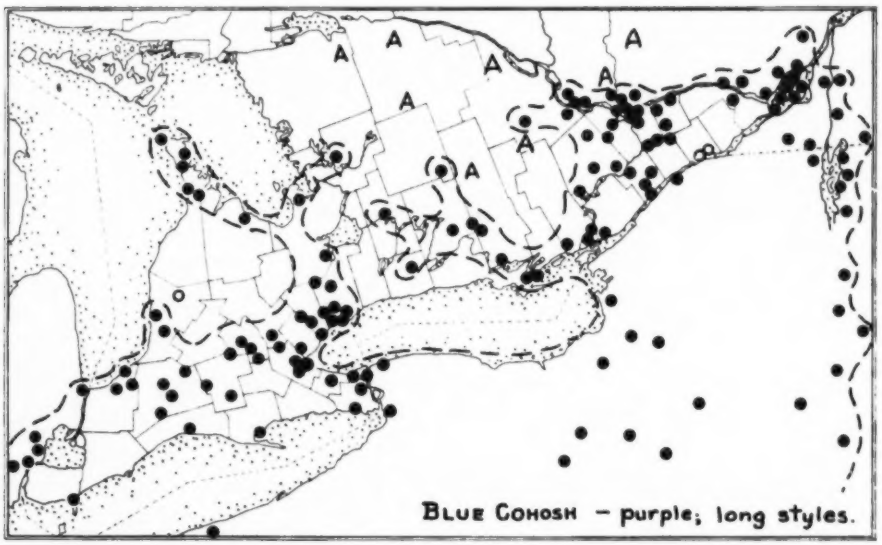


Map 2. Locations for the 23 blue cohosh specimens typical of the species, Caulophyllum thalictroides, *gathered in the Canadian area shown.*



Map 3. Locations for the specimens of blue cohosh of the kind known as var. giganteum *Farwell (not all 183 specimens from the Canadian portion are shown).*